

What is claimed is

1. A probe card structure comprising:

5 probe sections comprising an insulated circuit board; probes of silicon material which are formed on the insulated circuit board, and are in contact with the pad of a device to be measured; and conductive wiring electrically connected to the probes and formed on the insulated circuit board;

10 supporting structures which support each of the probe sections;

fixing structure which fixes the supporting structures together;

15 printed circuit which is connected to the fixing structure, and is electrically connected to the measurement device transmitting the measurement signals to the device to be measured, and has conductive wiring; and

20 wiring connection means for electrically connecting the wiring of the probes and the wiring of the printed circuit.

2. The probe card structure according to Claim 1, wherein the supporting structures and the fixing  
25 structure are made of one selected from the group

consisting of invar, kovar, quartz and ceramic.

3. The probe card structure according to Claim 1,  
wherein the wiring of the probe section and the wiring  
5 of the printed circuit are electrically connected by a  
sub printed circuit which can be flexible printed  
circuit or rigid printed circuit board.

4. The probe card structure according to Claim 3,  
10 wherein the wiring of the probe section and the wiring  
of the sub printed circuit are electrically connected  
by metallic wire formed by the wire bonding method.

5. The probe card structure according to Claim 3,  
15 wherein the wiring of the probe section and the wiring  
of the flexible circuit are electrically connected by  
the anisotropic conducting film.

6. The probe card structure according to Claim 3,  
20 wherein at least one capacitor is installed to reduce  
the electric noise on the flexible printed circuit.

7. The probe card structure according to Claim 3,  
wherein contact pad of the sub printed circuit and the  
25 contact pad of the circuit board are electrically

connected by pogo pin.

8. The probe card structure according to Claim 3,  
wherein the contact pad of the sub printed circuit and  
5 the contact pad of the circuit board are electrically  
connected by an perpendicular conductor of silicon  
rubber material which conducts electricity between top  
and bottom surface through vertically embedded  
metallic wires with a diameter of  $35\mu\text{m}$  or less,  
10 positioned in an array of  $0.07\sim 0.45\text{mm}$  matrix.

9. The probe card structure according to Claim 3,  
wherein a plating layer is formed on the probe of the  
probe section and the wiring.

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10. The probe card structure according to Claim 9,  
wherein the plating layer is formed by a nickel  
plating layer or a gold plating layer.

20 11. The probe card structure according to Claim 10,  
wherein a groove is formed at the tip of the probes  
before the plating layer is formed.

12. The probe card structure according to Claim 1,  
25 wherein at least a screw is installed in the

supporting structure to adjust the 3-dimensional locations of the supporting structures and the fixing structures.

- 5 13. The probe card structure according to Claim 1, wherein at least a screw is installed in the fixing structure to adjust the 3-dimensional locations of the supporting structures and the fixing structures.